

ON THE

# TREATMENT OF THE HEMORRHAGIC DIATHESIS.

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Several interesting cases of this troublesome and dangerous disease have lately been read before this Society, and others have been detailed in various periodicals of the day. In almost all, the issue has been most disastrous; the treatment, though active and varied, proving of little effect in even retarding the fatal result,—a proof that, while on many points therapeutics have of late years advanced rapidly and surely, on this we can lay no claim to modern improvement.

To enter fully into the subject would probably require an extended range of both chemical and physiological experiment, directed towards the elucidation of the formation and actual nature of the morbid condition of the blood and blood-vessels, on which the liability to hemorrhage depends; and it is much to be regretted, that in this age of chemical and microscopical research, some one adequate to the task has not laboured in this field so rich in promise. Meanwhile, however, an inquiry into the amount of knowledge at present attained, and an attempt to methodise the practical inferences deducible therefrom, so as to render them more available towards successful treatment, may prove not without its use; both as calculated to enable us to contend more satisfactorily with future instances of the disease, and also as constituting a sound preliminary step towards the further and more thorough investigation of the subject. To aid in the obtaining of that step, I would beg briefly to direct attention,

And, first, as to the nature and cause of the morbid state. For,

according to the old yet true adage, "that a knowledge of a disease is half its cure," could we arrive at satisfactory issues in this part of the inquiry, our subsequent progress would be amazingly facilitated. But on this subject I am aware that we do not possess data sufficiently explicit to warrant definite conclusions; and hence may only be able to make an approximation to truth. It has been supposed by some, that the vice in question is resident in the blood, by others, in the containing blood-vessels; but it is probable that both are more or less implicated.

1. *Morbid state of the blood.*—In almost all the cases, the blood which escaped in the hemorrhage is described as preternaturally fluid; and in some it is plainly stated to have been deficient in fibrin;<sup>1</sup> but whether this latter statement rests on chemical investigation or not, we have no means of knowing. We have the less inclination to doubt its accuracy, however, such being the state in which we would naturally expect to find the blood under such circumstances.

This deficiency in the proportion of fibrin is doubtless one of the causes of the hemorrhagic tendency, and has been in existence long before the establishment of the solution of continuity in the solids, which leads to the disaster. But as the bleeding advances, so does the disproportion of the fibrin, as well as of the blood corpuscles; the effused fluid, towards the termination of the case, scarcely staining the bandagings, and often resembling a colourless serum.<sup>2</sup> From this we derive a practical maxim of no slight importance, to be afterwards more fully illustrated,—that to be successful, we must be *early* as well as energetic in our remedial means, so long as we have some fibrin to coax into the solid form, and afford a barrier to the further escape of the already thin and fast thinning fluid.

But before proceeding farther, let us define the kind of hemorrhage in question. It is capillary, or, at all events, proceeds only from the capillaries and the minutest ramifications of the arterial twigs. No arterial branch of any importance is involved; bleeding from such would be comparatively but an ordinary case, and easily arrested by ligature. We do not deny that arteries are subject to a similar kind of hemorrhage as that of which we treat; a large wound made in a patient labouring under the hemorrhagic diathesis, would give us an example of it.

<sup>1</sup> "The blood, (which had been examined through a microscope,) although the man looked so strong and healthy, differed from the usual character of this fluid, and seemed to be deficient in fibrin; the globules were broken down, being, as might be called, 'diffusent.' The blood was altogether in a bad state, containing a proportion of globules with all the characters of those entering into the composition of pus." (*Liston, Lancet*, No. 816, p. 137.)

<sup>2</sup> In Dr Allan's case, (*L. and E. MONTHLY JOURNAL*, June 1842,) "for the last twenty-four hours the discharge was colourless serum."

We should then have vessels of all grades busy in parting with their contents. The larger, however, would be arrested as usual by ligature, while from the smaller the danger would proceed; as evidenced in a case related by Dr Clutterbuck.<sup>1</sup> A patient of a hemorrhagic tendency became affected with "white swelling" of the knee joint; a puncture of the tumour by a lancet was followed by most alarming bleeding; yet "a surgeon was found bold enough to propose amputation, which accordingly was performed, in opposition to the opinion of a more cautious practitioner." The principal bleeding points were secured as usual, but yet "the patient bled to death, the blood continually oozing from the stump in spite of all applications." In a case of Mr Wardrop's, in which the hemorrhage was induced by the insertion of a seton, Mr W. "secured no less than nine vessels with ligatures. Blood continued, however, to ooze from numberless small orifices over the whole surface of the wound, which every mode of treatment usually resorted to failed in arresting, and the patient died in a few days."<sup>2</sup> We wish, then, to limit our present inquiry to the capillary oozing from trifling breaches of continuity, more troublesome and formidable than the gaping mouth of any arterial trunk, and hitherto presenting no ill founded claim to be enrolled among the opprobria of surgery.

In what manner do these minute vessels conduct themselves in a trifling wound of ordinary and healthy circumstances? For a brief period, their cut orifices remain open, and discharge a gradually lessening stream of their contents, which, in the course of a few minutes, entirely ceases. And the diminution and cessation have resulted from retraction and contraction of the vessels at their cut points, with blocking up of the contracted orifices, by means of a solid plug composed of coagulated blood. In the larger of these minute vessels, this terminal plug may be seen pouting on the surface of the recent wound, and if disturbed or removed by the finger, sponge, or forceps, the bleeding is instantly renewed; though in a fainter stream than at the first, in consequence of the now contracted state of the vessel's calibre. But slender though the jet be, it will not cease spontaneously (*i.e.*, by nature's haemostatics alone,) until the place of the removed clot be again occupied by one of more recent formation; plainly showing that a change in the blood—coagulation—as well as in the vessels' coats—contraetion—is essential to the arrest of the hemorrhage.

Now of this salutary change, the blood does not seem capable in the hemorrhagic diathesis. Some have gone so far as roundly to state, that it is then incapable of coagulating at all; and some cases would certainly seem to bear out that opinion,

<sup>1</sup> Lancet, No. 133, p. 99.

<sup>2</sup> Wardrop on Bleeding, p. 14.

the discharged blood remaining thin and perfectly fluid, even after long rest and exposure to the atmosphere. In the majority of recorded cases, however, the blood is capable of a certain degree of coagulation, at all events after extrusion; but the clot is loose, porous, easily permeated by blood, and consequently of no use as a haemostatic. A patient of Mr Smethurst, nearly lost by hemorrhage from the alveolus, was almost choked more than once by the formation of *coagula* in the fauces.<sup>1</sup> In a patient of Dr Burnes, notwithstanding all efforts to stop it, "a spongy coagulum, the size of a small apple, twice formed over and obscured the bleeding points."<sup>2</sup> In a case successfully treated by Mr Lane, the blood was "so thin in consistence, that it resembled a mixture of blood and water as it flowed down the face; occasionally, however, it formed a distinct, but not very firm coagulum."<sup>3</sup> Mr Lloyd, called to a case apparently of this nature, after extraction of a tooth, had to "remove a small clot, from under which the blood oozed," in order to reach the socket.<sup>4</sup> Thus, at the commencement at least, of the majority of the cases, the blood, though less disposed to coagulate than usual, is yet capable of undergoing that change, at all events on exposure to atmospheric influence; but still the coagulum is imperfectly and feebly formed, delicate and loose, and not available for haemostatic purposes; on the contrary, encouraging bleeding, by accumulating on the surface, and acting thereon as would a warm and moist sponge. At the same time, however, while we are thus debarred from laying down as a general rule, that in such cases the blood has *no* power of coagulation, yet it seems certain that the more urgent the case, the less the capability of effecting that change, whether the urgency arise from original inveteracy, or from persistence in hemorrhage after ineffectual treatment, thereby inducing further deterioration of the fluid. And in some cases, the power seems wholly lost of obtaining even the similitude of a coagulum. In a recent and fatal example, reported by Dr Hay and Dr Roberts, even at the commencement of the hemorrhage, it is stated, "no coagulum was found about the mouth, or in what he had spat out, the alveolns being as clear as when the stump was first taken away."<sup>5</sup> And in a case where Mr Roux tied the radial and ulnar arterics on account of hemorrhage from the palm, and in which the patient of course died by continuance of the capillary oozing, not only from the original site, but also from the fresh wounds, the little remaining blood was found fluid even in the right side of the heart, and "there was no trace of any coagulum either above or below the seats of the ligatures."<sup>6</sup>

<sup>1</sup> Lancet, No. 909, p. 648.

<sup>2</sup> Lancet, No. 896, p. 185.

<sup>3</sup> Lancet, No. 965, p. 725.

<sup>4</sup> Lancet, No. 902, p. 404.

<sup>5</sup> Lancet, No. 919, p. 74.

<sup>6</sup> Medico-Chirurgical Review, No. 29, p. 226.

On what does this *diminished power of coagulation in the blood depend?* most probably on want of its due proportion of fibrin. That it is thus deficient seems to be generally admitted by all writers on the subject ; and although, as already stated, we yet seem wanting in an actual demonstration of the fact, reasoning goes far to enforce the belief. Sudden loss of vitality of the blood prevents its coagulation, as in death by lightning and some poisons ; but such a cause cannot be in operation here. " Ordinary coagulation depends on the fibrin of the blood, which, separating itself from the fluid in which it was previously dissolved, and during this process attracting the red particles, forms a clot more or less dense, in proportion to the amount of fibrin which it contains. This separation will not occur, however, if the amount of fibrin should be small, or its vitality low. A homogeneous mass, deficient in firmness, presents itself under such circumstances ; though the solid part of this may pass into a state of more complete condensation after the lapse of a certain time. That the coagulation is due to the fibrin, and that the red particles are merely passive in the process, appears from several considerations,"<sup>1</sup> &c. Increased density of coagulum (what we want as a haemostatic) is well known to depend on increase of the proportion of fibrin in the coagulating blood, as occurs in the inflammatory diathesis. But the proportion of fibrin is not to be here estimated in regard to the general mass of the blood merely, but rather in regard to the blood globules ; it being only when excessive in proportion to these, that the tendency and power of coagulation become most marked. In chlorosis, for example, in which condition the globules are diminished, while the fibrin remains the same, the clot of drawn blood is firm, though small, and not unfrequently exhibits the buffy coat ; and we know that in chlorotic patients, hemorrhage is remarkably unfrequent ;<sup>2</sup> while in simple plethora, in which the globules are excessive, the clot is of an opposite character. Sometimes both globules and fibrin are deficient, and in experiment it has been found " almost impossible to deprive blood of its corpuscles, without, at the same time, defibrinising it."<sup>3</sup> This double deficiency is found to obtain in scrofula, and seems to exist also here : and between the two cachexies, the serofulvous and hemorrhagic, we will find other points of similarity. In such a state of utter impoverisation, the blood will, of course, be unequal to the efficient performance of many vital actions, coagulation among the rest.

Mere loss of blood tends to produce this deficiency of both fibrin and globules, but not in an equal ratio. At first the latter are chiefly removed ; and consequently, at an early period of the case, loss of blood thus favours natural haemostatics, by

<sup>1</sup> Carpenter's Physiology, p. 474.

<sup>2</sup> Op. cit., 485.

<sup>3</sup> Op. cit., p. 478.

increasing the proportion of fibrin to globules, and thereby augmenting the tendency and power of coagulation; but the hemorrhage continuing, both fibrin and globules disappear—hope from coagulation then becoming more and more feeble, as the experience of such cases as those we are now treating of most abundantly proves.

But not only is diminution of the proportion of fibrin favourable to continuance of hemorrhage, by inducing non-coagulability of the blood; it also directly predisposes to it, by occasioning congestion of the capillaries. “A certain degree of viscosity has been found, by the experiments of Poissoeuille, to favour the passage of fluid through capillary tubes; and thus, if the viscosity of the blood be diminished by a loss of part of its fibrin, stagnation of the current, and extravasation of a portion of the contents of the vessels will be the result. This has been fully proved by the numerous experiments of Magendie.”<sup>1</sup> “It has been ascertained that one of the effects of a diminution in the proportion of fibrin is a tendency to the occurrence of hemorrhage or of congestion, either in the parenchymatous tissue, or on the surfaces of the membranes.”<sup>2</sup> This condition of capillary congestion may thus of itself lead to hemorrhage in an unbroken texture; and in the case of a wound, if a continuance of such tendency to capillary congestion be coupled with impaired or lost power of coagulation in the accumulating fluid, we can readily understand how the amount and continuance of hemorrhage may be thereby dangerously enhanced.

We believe, then, that in the hemorrhagic diathesis, the blood contains a less proportion both of fibrin and of globules, than in health; and that in consequence it predisposes to capillary congestion, and is more or less deficient in the power of coagulation.

2. *But the blood is not alone to blame. The capillaries and arterial tubes are doubtless deficient in their healthy properties.* Are they wanting in the actual amount of their fibrous texture, or merely in their contractility? We incline to the latter opinion. In dissections of those who have fallen a prey to the hemorrhagic diathesis, the arterial vessels have been found attenuated in their coats—“reduced to half their usual thickness;” but this seems more probably the result of passive dilatation, by loss of contractility, than of original deficiency of the fibrous coat, as Dr Burnes and some others seem to suppose. (*Lancet*, No. 902, p. 405.)<sup>3</sup> “That the capillaries possess a contractile

<sup>1</sup> Op. cit. p. 478.

<sup>2</sup> Op. cit. p. 484.

<sup>3</sup> In the case of Joseph Laneton, Mr Gatecombe, in tying a wounded artery, observed it to be “thin in its coats, like a vein rather than an artery.” And on the fatal termination of the case, Mr Blagden, in examining the branches of the external carotid, states that “their coats appeared to be thinner than usual, and nearly transparent.”—*Medico-Chirurg. Trans.*, vol. viii. p. 227.

power, in a far higher degree than do the larger arteries, and more easily excited than that of the smaller, appears scarcely to admit of a doubt. It has been recently asserted by Schwann, that they possess the same kind of fibrous tissue in their walls, as do the large vessels; and this cannot be regarded as improbable. That the contractile coat of the capillaries has for its office to regulate the calibre of the vessels, can scarcely be doubted; but any general permanent contraction would only occasion an obstacle to the circulation, as is shown by the effect of stimulating injections, which, if thrown into the vessels before their vitality has been lost, will not pass through the capillaries.<sup>1</sup> In health, then, these capillaries, by their own inherent contractility, regulate their calibre so as to favour due circulation within them, and if need be, can exert it to an unusual extent, so as to arrest the passage of fluid within them *in toto*, as doubtless they do in the ordinary cessation of hemorrhage from a recent wound. But if deficient in this contractility, or altogether deprived of it, there will be a consequent and proportionate failure in this most important haemostatic means. The capillaries will then be but passive tubes, through which the blood continues to flow; and that such a state of the capillaries and arterial tubes exists in the hemorrhagic diathesis, both reasoning and actual observation on dissection, sufficiently demonstrate.

Thus, to constitute the hemorrhagic diathesis, we have not only the blood flowing through dilated and non-contractile tubes, but sent thither in greater volume than in ordinary and healthy circumstances, thinner and more fluent than in health, and little if at all able to arrest its own course by assuming the solid form. In addition, the capillary tunics are not only thin, but weak, and easily lacerable; a slight bruise produces serious ecchymosis; coughing may induce haemoptysis; a sneeze brings on epistaxis; diarrhoea occasions copious evacuations of blood by the rectum; and extravasations are not unlikely to follow but slight causes within internal cavities. The whole circulating system, besides, is usually in an irritable and excited condition; the pulse being considerably above the healthy standard, and the heart acting with unusual force and sharpness. Not unfrequently, a febrile condition at the same time exists; and when it does exist, it increases the intensity of the diathesis.<sup>2</sup>

Such being the apparent causes of the disorder, we are now prepared to turn our attention to the cure.

1. *Can we amend the faulty condition of the blood?* Were the red globules in excess, we could easily diminish their amount, thereby favourably increasing the proportion of the fibrin, by venesection; and thus we should at once readily obtain blood

<sup>1</sup> Carpenter's Physiology, p. 416.

<sup>2</sup> Brit. and For. Review, vol. ix., p. 247.

more disposed to firm coagulation. But the globules are already themselves deficient, and consequently from that mode of treatment, (what may be termed the negative increase of the proportional amount of fibrin,) no hope is to be entertained. Whether we will or not, however, bleeding goes on from the part, at first drawing more from the globules than the fibrin; and during this brief and early period of the case, a comparatively favourable opportunity is thus afforded for coagulation. Of that we are bound to avail ourselves, as it flits by; but it is plainly a condition of the system which we dare not seek directly to imitate or obtain. As the bleeding continues, both fibrin and globules disappear, ultimately little else than serum remaining in circulation; and during that part of the case, all efforts towards arrestment must plainly be especially hopeless.

Can we effect a direct and actual addition to the amount of circulating fibrin? We have already hinted at a considerable similarity between this hemorrhagic condition of the system and that of scrofula. In both, there is a lamentable want of fibrin. In the latter form of disease, albumen is constantly being substituted for the more valuable plastic material; and in the treatment, it is a principal feature to increase the power of elaborating albumen into fibrin; in other words, to increase the supply of the latter. A similar mode of procedure, therefore, with a like object in view, will be available in the hemorrhagic diathesis. The general powers of the system are to be invigorated by nutritious diet, &c. This is very suitable in struma, when plenty of time is afforded for such treatment taking effect. But in the hemorrhagic diathesis we have comparatively but a very brief period for action, and can repose no confidence in aught so dilatory. Nevertheless we are not to transgress the principle, and are to be guided by it in the dietetic portion of our treatment. The patient is to be plentifully supplied with good air, and with a full allowance of nutritious, yet not stimulating food. He will be thirsty from loss of blood, and glad to slake his thirst with aqueous fluids. But he ought not to be allowed to do so. These would but add to the serum, and we have too much of that already. As the bleeding proceeds, faintness comes on; and wine, brandy, and cordials, are the usual remedies. These will do but little good in the matter of the fibrin; and by freshly exciting and accelerating the circulation, will destroy any chance of benefit we might have obtained by the approach to syncope favouring coagulation.<sup>1</sup> In terror of such inopportune excitation of the arterial system, other practitioners follow a mode of treat-

<sup>1</sup> In a case of hemorrhagic diathesis, narrated by Dr Duncan in the *Annals of Medicine*, the patient used a "bottle of port wine daily," yet continued to sink till that system of treatment was abandoned. (*Lancet*, No. 974, p. 149.)

ment diametrically the opposite, allowing the patient nothing but the weakest aliment, and that even in starving moderation; forgetting, that with such a run upon their stock of capital, the treasury will soon be wholly emptied, unless active measures be adopted to keep up the supply, and if possible, with a more solid and more sterling currency. The system of diet, then, in the protracted cases, we conceive ought to be full and nutritious, yet by no means stimulating. As a prophylactic remedy, the dietetic mode of treatment promises to be of much value, but it is unequal to meet the actual emergency, there being no *time* thereby to amend the deficiency of fibrin.

Can this be done by inducing an *inflammation*? That the quantity of fibrin is invariably increased during active inflammation, has been satisfactorily shown by M. Andral—the increase commencing at once, and being strictly proportional to the advancement and intensity of the inflammation. To this result the existence of inflammatory fever is not essential; it is the local inflammation itself which causes it; yet the inflammatory fever being usually proportionate to the amount and intensity of the local action, will consequently be almost invariably accompanied by, though not causing, this increase of fibrin. And it is important further to observe, that a mere febrile condition, unattended by an inflammatory action, so far from increasing the amount of fibrin, has a precisely opposite effect. In idiopathic fever, for example, the amount of fibrin is invariably found diminished, and the patient prone to hemorrhagy,—another strong reason why a stimulating system of treatment, as by wine, brandy, &c., is not to be adopted. An active local inflammation, then, and the less accompanying fever it has the better, (actual excitement of the general circulation being manifestly inimical to our object,) will *speedily* increase the proportion of fibrin, and thereby promote the formation of coagulum. But mere coagulation is not what we desiderate; it is the formation of a firm and dense clot; and it is just this form of slow yet sure coagulation that an inflammation will afford. And this leads us to remark, that even in the emergency of the hemorrhagic diathesis, when every moment is of importance, we are not to seek for rapid coagulation, which is usually loose and porous; but for rather a slow completion of that process, whereby a more solid and efficient clot will be obtained.

Are we then to induce this influence in the site of the hemorrhage? No. By doing so we should amend the general state of the circulating fluid, but sadly deteriorate the local, increasing the volume of blood, and inducing a tumultuous circulation, in a part which has no power to control it;—an aggravation of the bleeding must inevitably follow. Besides, by wilfully inflaming the part, we should render it intolerant of pressure, which, as

we think, is our most trust-worthy item of local management. An irritant applied at some distance from the bleeding-point, however, so as rapidly to excite a superficial inflammation on a comparatively unimportant part, might not only obtain the desire increase of fibrin in the general mass of blood, but also have derivative effect on the actual source of the hemorrhage, and so fulfil a twofold indication towards its arrest. This plan, therefore, of directly amending the proportion of the fibrin, seems both feasible and safe, and consequently worthy of trial. And, on the principle of revulsion, is it not possible that *dry cupping*, employed at some distance from the bleeding point, might have the effect of at least diminishing the hemorrhagic flow?

But, turning from such direct interference with the fibrin, have we any means by which, no matter how, *we can promote satisfactory coagulation of the blood*, and thereby use them as haemostatics? *Acetate of lead with opium*, given internally, has long been famous in this respect, and that not undeservedly. Dr Elliotson has shown that the lead can be given in heroic doses, and even for a considerable time, without any untoward result,<sup>1</sup> with the simple precaution of keeping the bowels freely open—an indication which we will find to be otherwise of much importance in the treatment of the hemorrhagic diathesis. As a general astringent, according to Dr Christison, “no remedy yet known, equals in efficacy the *pilulae plumbi opiatæ* of the Ed. Ph.; each of which contains 3 grs. of the acetate of lead, and half a grain of opium, and of which, from two to six may be given in the course of the day, according to the urgency of the symptoms.”<sup>2</sup>

This remedy doubtless has the power of calming the general circulation; probably it increases the tendency of the blood to coagulate; plainly it has a depressing influence on the nervous system, and we know that this “favours coagulation of blood in the vessels;”<sup>3</sup> besides, there is good reason to believe that a tonic or astringent effect is exerted by it on the capillaries themselves, and thus it justly maintains a claim to our attention as a valuable means of combating the hemorrhagic diathesis. In the great majority of cases, it can be given freely with perfect safety. Should it be found to disagree, it may be conveniently superseded, at least for a time, by the *sulphas aluminae et potassæ*, doses of 15 or 20 grains and upwards—a powerful, and in cases safe astringent.<sup>4</sup>

*Nauseating remedies will moderate the heart's action*, and they seem to have besides a powerful effect in arresting hemorrhage. The tendency to firm coagulation of the blood increased, is a fact well attested by experience. Thus it is p

<sup>1</sup> *Lancet*, No. 310, p. 607.

<sup>2</sup> *Dispensatory*, p. 705.

<sup>3</sup> *Carpenter's Physiology*, p. 476.

<sup>4</sup> Dr Lynch, *Prov. Med. and Surg. Journal*, May 29, 1841, p. 162.

ble that bloodletting often succeeds as a haemostatic; but by the suitable administration of nauseating remedies, the same good effect is obtained, while the valuable fluid is yet saved to the system; and in the case of the disease of which we are now treating, such saving is obviously precious indeed. Cautious and small doses then, of ipecacuan or tartrate of antimony, producing and maintaining nausea, will assist in the haemostatics, not only by moderating the general circulation, but also by favouring coagulation in the capillaries. But this treatment ought not to be pushed to actual emesis, as has been proposed.<sup>1</sup> All the good effects of the medicine are obtained by an action short of vomiting, and that effort is well known to be by no means a sedative; it shakes the frame to its centre, and often produces powerful reaction, even in those systems which injury or sickness may have reduced almost to the lowest ebb.

But it may be said "the patient gets sick enough from the bleeding alone, and the exhibition of nauseants would consequently, at the best, be but an act of supererogation." True, the patient becomes sick in the progress of the case, *but not at the right time*.

The advantage of skill and experience is not so much to invent remedies, as to know *when* they ought to be administered. By the time nausea has been occasioned by mere loss of blood in this affection, that fluid has lost much of the fibrin in which it was from the first sadly deficient, and cannot now avail itself of the hull in its circulation, to be converted into the solid form. But induce an artificial nausea at an early period, while there is yet fibrin and a power of coagulation; if possible, take advantage of that period when the bleeding has as yet but diminished the volume of globules, leaving that of the fibrin intact—and then, but not later, we may hope for a happy result,—another reason for *early* as well as energetic practice in the treatment of the hemorrhagic diathesis. Besides, during the febrile paroxysm which usually attends on the hemorrhagic crisis, the nauseating treatment will plainly tend to remove this, at the same time that it favours coagulation, and opposes capillary congestion.

In the case of hemorrhage after tooth extraction, when binding up of the jaws is necessary, efficiently to obtain the all-important pressure, a passage for the internal remedies by the mouth is to be contrived, as in fracture of the jaw; and failing that, their exhibition will be by the rectum. And it is very plain, that vomiting, from whatever cause, is, under such circumstances, to be carefully avoided.

*Since we can diminish the amount of the serous portion of the blood, fibrin remaining, will we not thereby assist the blood in its*

<sup>1</sup> Mr Trenor, Dublin Journal of Medical Science, January 1840, p. 477.

assumption of the solid form? In theory, such a plan promises fairly. A smart dose of claterium, obtaining a serous discharge from the bowels, might have a most salutary effect,—not the worse for having a depressing action on the nervous influence, we having already seen that so coagulation within the vessels is favoured. At a later period, its exhibition would require caution, it being now of importance to oppose and retard exhaustion. But still its exhibition is practicable, by administering support at the same time, adding as it were to one part while we draw from another, just as it has been lately proposed to combine the exhibition of tonics and stimulants with the frequent repetition of tobacco enemata in tetanus.<sup>1</sup> But, leaving theory and coming to facts, we find that *the sulphate of soda* has, on more than one occasion, been found of signal service in the hemorrhagic diathesis. Dr Otto of Philadelphia, and Dr Hay, Fellow of the Massachusetts Medical Society,<sup>2</sup> are loud in its praises, seeming to regard it almost as a specific; but, be it remarked, *only when administered in such doses as to purge actively*. By M. Andral, sulphate of soda acting on the blood is considered the best means of retarding its coagulation, and consequently of obtaining a firm clot when it is ultimately formed.<sup>3</sup> The inflammatory clot is tardy but dense; and so is that of the sulphate of soda. When coagulation is rapid, the clot is loose, has a large proportion of serum entangled as it were in its substance, and expels little or none of it by subsequent contraction; “on the other hand, if the coagulation be slow, the particles of fibrin seem to become more completely aggregated, the coagulum is denser at first, and its density is greatly increased by subsequent contraction.”<sup>4</sup> That is the kind of coagulation we want, —slow, dense, and efficient; in many, if not most of the cases of hemorrhagic diathesis, we have rapid and loose coagulation without arrest of hemorrhage. Besides, one of the best antidotes to poisonous effects resulting from the internal exhibition of acetate of lead, is the sulphate of soda;<sup>5</sup> so that this remedy is useful in the treatment of the hemorrhagic diathesis on three counts. 1. By obtaining serous discharge from the bowels, the mass of blood is indirectly acted on so as to favour solid coagulation; 2. Suitable coagulation is also promoted by direct admixture of the salt with the blood; and, 3. All bad effects are by it obviated, which might otherwise proceed from lead previously administered. The lead and sulphate of soda must not be given together, however, with a conjunctly remedial object; as the former would be precipitated in an insoluble form. In a case men-

<sup>1</sup> Mr Bullock, Med. Gazette, July 2, 1841, p. 582.

<sup>2</sup> London Medical and Surgical Journal, 1808, p. 69, and 1815, p. 9.

<sup>3</sup> Carpenter's Physiology, p. 480.

<sup>4</sup> Op. cit. p. 477.

<sup>5</sup> Christison's Dispensatory, p. 704.

tioned by Dr Allan, much benefit was derived from smart purgation by sulphate of *magnesia*, showing that the *purgative* action is probably not the least important.

II. Let us now turn our attention to *the condition of the capillaries*. We have already stated the probability that the acetate of lead has a directly astringent effect on the capillaries, besides its action on the blood and nervous system. *Opium*, we believe, has a more directly tonic effect on the extreme vessels; and it is by such action that its beneficial effects in *gangrena senilis* have been attempted to be explained.<sup>1</sup> Besides, its exhibition will have a most salutary influence in quelling that general nervous tumult in the circulation, which is so sure a follower of excessive loss of blood. The happy combination of two such remedies, in the *pil. plumb. opiat.*, cannot but be regarded, then, as constituting a most powerful remedy in the hemorrhagic diathesis; acting directly and favourably on the blood; calming the heart's action, and the general circulation; subduing the nervous influence; and correcting, in no slight degree, the degeneracy of the capillaries themselves.

In many of the recorded cases, the patients are said to have laboured under "rheumatic pains,"<sup>2</sup> previous to the actual outbreak of the disease. It is not easy to believe that such pains had a genuine rheumatic origin; for in that disease we know the fibrin of the blood is not deficient, but excessive, and the tendency to dense solidization marked, as shown by the buffy and cupped appearance of the blood after venesection. To hazard an hypothesis, it would seem more feasible to refer the pain called rheumatic, to a perverted action in the minute vessels themselves, (we will not call it inflammatory,) which leads to further derangement of their functions, rendering their coats still less contractile and more lacerable, and of which perverted action pain in the parts is but one of the natural results. If this be so, we can assign another beneficial action to the opium administered under such circumstances.

*Styptics* will act beneficially by having a local and astringent effect upon the capillaries. There are many styptics. Of spirits of turpentine I have received a high character from my friend, Dr Vanzandt of St Louis, who states that in extreme capillary hemorrhage from cutaneous and mucous surfaces, he has again and again, after the failure of others, obtained the best success. And other practitioners speak also in its praise. Mr Nasmyth of Edinburgh seems inclined to trust mainly in the acid solution of the nitrate of mercury; and his acknowledged eminence and experience entitle his opinion to much consideration; but it is to be remembered, that in many cases of annoy-

<sup>1</sup> Skey.

<sup>2</sup> Medico-Chirurgical Review, vol. xxix. p. 227.

ing hemorrhage after extraction of teeth, in which he has found this remedy effectual, there may have been no hemorrhagic diathesis. Creasote has often proved itself a valuable styptic. The nitrate of silver not only may be supposed to constringe the textures to which it is applied, but by forming a coagulum of its own, as it does by immediate action on the fluids with which it is brought in contact, it acts powerfully, for a short time at least, as a haemostatic, and thereby fulfils the important indication of obtaining a *dry bed* on which we lay our neatly fitting compress of lint or cotton. On account of this twofold action, I am inclined to give it the preference. It is used lightly, and not held and pressed on the part for any time. Thus employed, it is no caustic, in the strict sense of the term,<sup>1</sup> otherwise I should not be heard in its praise; for I believe

*The Cautery*, actual and potential, and especially the former, not only to have no virtue as a haemostatic in this disease, but certain to inflict almost irretrievable injury. The cautery applied in ordinary hemorrhage, to which pressure and ligature are inapplicable, is satisfactory enough; as it sears the surfaces, it puckers and twirls up the previously open vascular mouths, and moreover mechanically shuts them by a dense coating of eschar, which adheres firmly to the subjacent textures at every point, completely preventing hemorrhage; and when this separates in a day or two, by means of the usual ulcerative line of separation, the vessels are all permanently shut and consolidated by lymph in progress of organisation. But not so in the hemorrhagic diathesis. The vessels are unable to pucker and contract; the eschar is comparatively soft, and will not adhere; if it do adhere, it is imperfectly, and for a short period; the parts have no power of the plastic formation necessary for permanent occlusion; and the result is, that the cauterisation either does not arrest the bleeding at all, or it does so only in part, besides mystifying and obscuring the source of the hemorrhage; or if the cessation be satisfactory at first, the flow returns in a few hours with redoubled vigour. The bleeding surface is increased; the part is being inflamed, and more blood sent thither; and, perhaps worst of all, it is fast becoming wholly intolerant of pressure. Should pressure, notwithstanding, be attempted to be persevered in, harm must ensue. Pressure on an ordinary ulcerating surface, we know, is most likely to produce hemorrhage at all times; and when the hemorrhagic diathesis is in operation, bleeding must be certainly aggravated. Theory thus speaks in a most condemnatory tone of the cautery. What says stern *faet?* In an early period of Drs Hay and Roberts' case, the actual cautery was

<sup>1</sup> Nitrate of silver used as a caustic, is similarly injurious as the cautery, as in Mr Craig's case, (*Lancet*, No. 974, p. 149,) where hemorrhage recurred with increased violence after separation of the eschar.

ppplied "without benefit;"<sup>1</sup> and a more suitable hot iron was reapplied on the same day, "but with no good result." Zaceutus healed a terrible and desperate hemorrhage which had resisted the red iron; and in a case mentioned by Plater, where "all kinds of remedies" were employed, hot irons among the rest, the bleeding was only arrested by death.<sup>2</sup> In a fatal case after tooth extraction, treated by Mr Blagden and Sir B. Brodie, use was made of the cautery, "which restrained the hemorrhage for six hours; but in the evening it returned as violent as before. The alveolus was again stopped, and the cautery applied twice, but the bleeding continued notwithstanding."<sup>3</sup> In Dr Allan's case,<sup>4</sup> it is stated, "at 4 P.M. I applied the actual cautery. . . . I again saw him at 8 P.M., and found the oozing the same." And in the case of an old lady who nearly lost her life by hemorrhage after tooth extraction, but who was ultimately saved by continued pressure, under the able management of Mr Liston, many years ago, —(long after recovery from that accident she died of ascites and general dropsy),—I well remember to have seen the actual cautery applied more than once, with that energy and accuracy which were to be expected, and yet without producing any check to the hemorrhage. In short, I believe the record of such cases will invariably declare the employment of the cautery to be not only inefficient but prejudicial; and that, in the great majority of cases in which it has been employed, death has resulted. I do not deny, that in many cases of obstinate hemorrhage after tooth-drawing, or other comparatively slight injury, the cautery has been successfully applied. But these were not examples of the hemorrhagic diathesis. The bleeding had a merely local origin, and cauterisation succeeded there, as it does when applied to the face of a stump, to a bony cavity, or elsewhere, when ligature and pressure happen to be inapplicable or inefficient. And without any perverted diathesis at all, we can readily understand that from an alveolus bleeding may often prove troublesome; just in the same way as it is invariably severe from incisions made in necrosis; the vessels being imbedded in dense unelastic texture, which will not permit retraction, opposes contraction, and favours a patent state of the cut orifices. And, were it not that the vessels are stretched and torn by evulsion, and not cut in removal of the tooth, I believe that *ordinary* hemorrhage would more frequently follow the operation than it does. It is plain, then, how important it is that we should carefully distinguish between such cases of ordinary and mere local origin, and those which depend on a constitutional vice; seeing that, in the

<sup>1</sup> *Lanceet*, No. 965, p. 752.

<sup>2</sup> *L. and E. Monthly Journal*, March 1842, p. 268.

<sup>3</sup> *Medico-Chirurg. Trans.* vol. viii. p. 226.

<sup>4</sup> *L. and E. Monthly Journal*, June 1842.

one, the cautery may be demanded, and its use prove profitable; while, in the other, it will not only fail, but injure. For not only does it not arrest bleeding in such cases, for the reasons formerly given, but on the separation of the eschar, which is speedy, the bleeding surface is enlarged, and the blood comes, too, with a better will. Besides, let either patient or surgeon be unsteady, (and how often must not this be the case?) and then in all probability the application will be made wide of its mark; for example, in being carried to the alveolus, it may singe the lip, cheek, or gum, and by the separation of *these* eschars, just so many additional hemorrhagic surfaces will be created, as happened in the case of Drs Hay and Roberts. Further, the swollen, spongy, infiltrated, painful, and fragile condition of the parts, resulting from even the best used cautery, disarms us of our chief local remedy, pressure: it can no longer be safely and surely applied. And although we have already seen reason to believe that the establishment of an active local inflammation anywhere, will effect a satisfactory change in the condition of the blood, yet if it be created by the cautery at the bleeding point, the general benefit will be completely merged in the local disaster; for experience tells us, that the occurrence of the asthenic, infiltrating, unhealthy inflammation, of which alone such parts are capable, is a most untoward complication of the case. There is a greater determination of blood to the part—its circulation is excited, the bleeding surface is enlarged—and consolidation by effused lymph, if it proceed at all, does so most slowly and imperfectly. The bleeding, consequently, is not only not arrested, but is actually increased. Thus, in Dr Hay's case, we find two distinct periods of hemorrhage, as stated by him;<sup>1</sup> the first, that of the simple kind, and which seemed "to have almost entirely ceased on the 29th December; the second, commencing on the subsequent day, when he complained of pain in the gums and face, and which was the beginning of that deranged condition of the system, which steadily increased, and terminated his existence, under symptoms resembling those of sea seury," that is, oozing of blood from all the inflamed, ulcerated, and sloughing surfaces. The one period, simple; the other, inflammatory. Dr Burnes<sup>2</sup> relates the case of a man afflicted with the hemorrhagic diathesis, who cut his thumb on a pane of glass: bleeding was temporarily arrested; but, "in a day or two, *inflammation of the hand* supervened, when bleeding again commenced, and continued to ooze, in spite of styptics, and other means employed by two respectable surgeons in attendance."

Thus, then, the cautery, not in any point beneficial, and both primarily and secondarily pernicious, is not to be thought of as

<sup>1</sup> L. and E. MONTHLY JOURNAL, p. 268.

<sup>2</sup> Lancet, No. 902, p. 405.

a remedial means in the hemorrhagic diathesis. Mr Roberts states, "In all the cases that have come under my notice, I never saw the application of the actual cautery of much (any) service: still in extreme cases we are bound to employ it."<sup>1</sup> To the former part of that statement we assent, disagreeing totally, however, with its conclusion. And we think we have made out a sufficient case against the cautery, to displace it from the confidence of the profession, which it seems yet unworthily to hold, as a remedy in such cases. Nitrate of silver we have spoken of favourably it is true, but not as an escharotic. And if the nitrate of mercury be employed, we should advise it to be diluted from the form of caustic, so as to be simply styptic and astringent.

On *pressure*, we would mainly rely, as the local treatment adapted to the hemorrhagic diathesis. Having applied the nitrate of silver gently, so as to obtain its minor effect, and thus, by a temporary cessation of the bleeding, secure a dry bed on which the compress is to be laid, we lodge a portion of lint, accurately adapted to the hemorrhagic surface, and over this another and another, increasing in size, so as to make a graduated compress, whereby pressure can be applied with power, and at the same time with great accuracy. For we believe that when pressure does fail, it is because it has been inaccurately applied, *i. e.* not duly directed on the bleeding point, either by blood becoming interposed, or in consequence of original mal-adjustment of the apparatus. A dry compress alone is efficient; and should we find the lint becoming saturated with blood, the oozing still continuing through the dressings, we must at once remove all, and re-adjust them with still greater attention to nicety of application. Supposing the bleeding surface to be situated on a leg or arm, the limb below the compressed point must be uniformly supported by a bandage, otherwise congestion, followed by ecchymosis as well as oedema, will most probably result. But while the pressure is uniform and accurate, it must not be severe; for one of the characteristics of the disease is, that pressure is not easily borne; it is apt to occasion "great distress, pain, throbbing, and irritability."<sup>2</sup> Severe pressure, pertinaciously employed, would produce inflammation, ulceration, sloughing, one or all, and of course aggravate the malady. But if the compression be begun moderately, and regulated by prudence, more especially if it have been both accurately and *early* applied,—before the part has become inflamed and swollen by other less appropriate and effectual remedies,—such untoward consequences need not be apprehended. On the general surface, compression can be managed by an ordinary bandage regulating and main-

<sup>1</sup> Lancet, No. 965, p. 753.

<sup>2</sup> Mr Ray, Lancet, No. 914, p. 825.

taining the compress. In the case of the alveolus, a little peculiarity of dressing is required. Sponging out the cavity, a pointed piece of nitrate of silver is passed to its bottom, in contact at the same time if possible with its sides, and held there momentarily. It is quickly withdrawn; and while the bed it leaves is still dry, this is rapidly and accurately filled by a thin strip or strips of lint, pushed carefully and firmly down by a probe, director, or other implement suitable for the purpose. Over the top of the thus tightly filled alveolus, is placed a dossil of dry lint; over this a wedge of cork, with a similar one on the opposite side, their thick ends looking forwards; the jaws are then firmly shut, and retained so immovably, by turns of a bandage, in the same way as for fractured jaw, a central interspace being left for the giving of food and medicine, and for the free circulation of cool air in the mouth. The pressure proving successful, the dressing will of course be left undisturbed for a considerable period. In leech bites, mere punctures, superficial wounds of the face, &c. compression will be most conveniently as well as effectually obtained, by firm application of the twisted suture.

*Exposure to atmospheric influence* is favourable to coagulation on the bleeding surface; but the obtaining of this is plainly incompatible with the paramount indication of pressure. However we ought to supply the patient with cool and free air, to have the mouth partially open as just advised, and in all situations to content ourselves with merely as much covering as is sufficient for retention of the compress, eschewing all other dressings whatsoever.

The continued application of *styptics* is also inconsistent with pressure, and being far less important, is to be abandoned.

On behalf of the efficacy of pressure, facts are not wanting. In the case of Drs Hay and Roberts, the periods of intermission, and the occasional gleams of success were due to pressure. M. Jourdain prefers pressure. M. Duval quotes a case from Arnaud Gilles, "which was saved by the use of pressure produced by the half of a bean."<sup>1</sup> In the cases mentioned by Mr Liston,<sup>2</sup> "the hemorrhage was generally at length commanded by pressure." In one urgent example, Mr Kendrick "at last succeeded in arresting the bleeding by the firm application of pledgets of cotton-wool soaked in the strongest spirits." In a case detailed by M. Marjolin, "continued compression for several days" proved successful.<sup>3</sup> In two cases Mr Smethurst succeeded in arresting the hemorrhage by continued pressure with his finger,<sup>4</sup> after cauterity and other means had failed. In Mr Lane's case,<sup>5</sup> "the in-

<sup>1</sup> L. and E. *MONTHLY JOURNAL*, March 1842, pp. 268, 269.

<sup>2</sup> *Lancet*, No. 816, p. 137.

<sup>4</sup> *Lancet*, No. 909, pp. 648 9.

<sup>3</sup> *Med.-Chir. Rev.*, vol. 29, p. 227.

<sup>5</sup> *Lancet*, No. 396, p. 185.

termissions were obtained principally by pressure." Mr Lloyd details several cases of obstinate and serious bleeding after tooth extraction, in which pressure proved successful. And he adds, "I have never had occasion to use other means than pressure; and think that when well and perfectly made, it will be found quite sufficient."<sup>1</sup> Dr Mantell states, that "in a child seven years of age, after all other methods had failed, and a fatal termination was expected, constant pressure was effected by a gold plate accurately adapted to the gum by a dentist, and the bleeding was effectually suppressed."<sup>2</sup> In the case of a gentleman, from whose forehead Mr Liston extirpated a small tumour, styptics, and "even the application of the actual cautery, failed to arrest the bleeding. At length, by having kept up pressure with the finger upon a piece of cork for several hours, the hemorrhage ceased."<sup>3</sup> And in Mr Liston's case, to which we formerly alluded, pressure succeeded, after repeated failure by cautery. In short, I believe that investigation will prove that in every successful case, pressure, early and judiciously employed, has been found one of the most important agents of the cure. Various modes of compression have been employed,—by cork, putty, sponge, plaster of Paris, the fingers, the tooth reintroduced, a plate of metal made to fit, &c.; but plain lint, well applied, affords equal prospects of success with any of the foregoing, and with the manifest advantage that it can at all times be easily obtained.

*Cold* has by some been proposed, but we think improperly. The part is already vitally weak, with scarcely power enough to sustain efficient pressure, without either ulceration or sloughing. The primary effect of cold will depress that vitality still further; and the hemorrhagic tendency of the second or reactive effect, which is almost certain to occur, is very obvious. Besides, cold is not favourable to coagulation.

*Deligation of the principal arterial trunk* leading to the part, is manifestly hopeless. In bleeding from an ulcerated aperture in an arterial branch, when there is no hemorrhagic diathesis, success will follow the application of a ligature to the main branch, even at a distant point,—ligature of the humeral, for example, for bleeding from ulceration involving the palmar arch; but as formerly stated, in the disease we are now considering the hemorrhage is capillary, and cannot be so affected. Recent experiments of M. Robert show, that after deligation of the carotid, for example, the flow in the artery is immediately resumed, though with gentler impetus, and in smaller bulk, on the distal side of the vessel; that, in fact, the interruption to the current is but momentary—an abundant proof that there is more than

<sup>1</sup> Lancet, No. 919, p. 75.

<sup>2</sup> Lancet, No. 816, p. 137.

<sup>2</sup> Lancet, No. 969, p. 900.

enough to feed the capillaries with an abundant supply. Besides, granting what is impossible, that the deligation of the principal artery does arrest the original hemorrhage, the patient's life would still be compromised by bleeding from the recent wound. The evidence of fact on the question is very plain. M. Roux tied the radial and ulnar on account of bleeding in the palm, arising from the hemorrhagic diathesis; his patient died "in the course of the evening;" "the blood oozed not only from the palm of the hand, but also from the two incisions of the fore-arm which had been made during the operations."<sup>1</sup> Sir B. Brodie tied the carotid in a hemorrhagic case, after extraction of a tooth; "but without effect; the gentleman lost his life." "The wound made in the operation bled very little at first, but in the course of a few minutes after the operation, it began to bleed profusely. No single vessel could be observed bleeding, but there was a general oozing from its surface."<sup>2</sup> And such doubtless has been, and will be the untoward result of all such erroneously conceived operations.<sup>3</sup>

Neither will general inclusion of the bleeding surface by ligature succeed. The part has not plastic power sufficient for salutary co-operation with the ligature; and as in Mr Wilson's case,<sup>4</sup> "ulceration very soon takes place and a fresh bleeding occurs."

Last, not least, in our list of remedies comes *transfusion*. The manner in which this is likely to benefit is plain enough. We have blood lamentably deficient in both globules and fibrin, especially the latter. But bad as that fluid is, we have lost, and are loosing much of it that we cannot spare; and if in room of this inferior liquid, we could obtain an immeditate and satisfactory supply of blood, in every way favourable for salutary purposes,—equal in amount, or nearly so, to that which has been lost,—the change would be a manifest improvement. We should then have the blood in our favour, and only the vice of the capillaries to contend with. That this happy change can be readily effected by skilfully conducted transfusion is equally plain; one important indication being attended to, however, viz., that the person from whom the blood is obtained, shall not only be in sound health, but free from plethoric tendency; plethora entailing an excess of red globules, a state which we rather wish to avoid—our acquisitiveness being chiefly directed towards the fibrin.

<sup>1</sup> Medico-Chir. Rev., vol. 29, p. 226.

<sup>2</sup> Medico-Chirurg. Trans., vol. viii, p. 227.

<sup>3</sup> A minor misfortune, were time granted, would be certain and rapid ulceration, at the deligated point, in consequence of the perverted condition of the arterial coats. Mr Gatecombe "applied a ligature round each of the divided ends of the bleeding vessel, but it gave way behind the ligatures, and the bleeding returned."<sup>1</sup>

<sup>4</sup> Wardrop on Bleeding, p. 15.

Two disadvantages attend the operation. 1. It is difficult and troublesome in performance; but by patience and skill that may be got over. 2. There is a risk of bleeding continuing to a dangerous extent, from the wound made to reach the vein; but experience is not so very unfavourable on this point as we might imagine. "Wounds of the larger blood-vessels, such as that in venesection, are usually found to heal as readily in hemorrhagic individuals as in any other set of patients. This, however, is not always the case."<sup>1</sup> Hemorrhagic patients have perished by the venesection wound.

Such risks will justly deter us from having recourse to transfusion, until other means have been tried and have failed. But when *in extremis*, we ought surely to afford the patient the chance, and that no improbable one, to be derived from this *dernier resort*,—the more especially as we have at least one good fact in its favour, afforded by Mr Lane.<sup>2</sup> His patient, a boy aged 11, had bled for six days, from a wound made in the operation for strabismus, and, when at death's door, was saved by transfusion from the vein of a "stout healthy young woman." "The wound at the bend of the arm healed in about ten days, and the boy, after being wheeled out in a hand carriage in the open air, soon recovered his appetite and strength, and in about three weeks went into the country, whence he returned in a few days perfectly well."

But lest we seem to be endangered by a very plethora of remedies, and knowing that one weapon skilfully handled is more truly defensive than an unwieldy panoply of arms, let us endeavour to make a judicious selection from our *armamentarium medico-chirurgicum*.

1. *As to internal remedies.* We would administer the acetate of lead and opium; with cautious doses of antimony or ipecacuan so as to induce and maintain nausea, short of enesis; and sulphate of soda would be occasionally exhibited in smart purgative doses. At first, we would give nothing in the shape of food or drink, being wishful to promote the state of nausea and depression, as favourable to the hemostatic result. But should the bleeding continue, our first and strongest effort having failed, we would then support the strength and circulation by nutriment, frequently given in small quantities, as soup, animal jelly, &c., avoiding aqueous fluids, as well as wine, brandy, and all other stimulants, unless driven to the latter at the eleventh hour and in despair.

2. *Of the local remedies*, we would hold accurate yet moderate pressure on the bleeding point, with uniform support of the lower parts when necessary, to be by far the most important;

<sup>1</sup> Med.-Chirurg. Rev., vol. xxix. p. 223.

<sup>2</sup> Lancet, No. 896, p. 185.

at the same time favouring as much as possible the application of atmospheric influence, and never trusting in a soaked and oozing compress, but instantly removing it to make way for a more accurate re-adjustment. Experience is yet wanting to attest the propriety of irritants and dry cupping, applied at a safe yet convenient distance; the one with an inflammatory, the other with a simply revulsive object.

3. Failing in the above treatment, we would unhesitatingly have recourse to transfusion, at a period sufficiently early to afford a fair prospect of success.

Haste and hurry are not to be mistaken for energy. To fly from one remedy to another is to give a chance to neither, and none at all to the patient. We are to choose a good line of conduct and adhere to it, not acting *per saltum*, as it were—with no crowd of remedies jostling one another, and each perhaps busy in undoing what its neighbour and predecessor has just been constructing.

But as in almost all cases, prevention is better than cure, have we no means of averting the hemorrhage by endeavouring to remove or mitigate the diathesis, when circumstances lead us to apprehend its existence? An examination of the various cases on record leaves little or no doubt that in each affected individual, the tendency fluctuates in its intensity; that it is hereditary, and chiefly in the male line, though not wholly so, as has been by some asserted; that it discloses itself at a very early age; and that usually it abates as the age advances. "Several have died in their youth; and in those who survived to more mature years, the hemorrhagic disposition seemed to become less and less decided."<sup>1</sup> At one time a patient has lost a good deal of blood from a slight injury, but not so as to occasion any alarm, either then or subsequently;<sup>2</sup> at another time, the stream is staunched with difficulty; at another, life is endangered; at a fourth, life is lost. And in some patients, periods of remission and exacerbation are sufficiently distinct. Thus, in the cases related by Dr Dubois of Neufchâtel in Switzerland, in whose vicinity the "bluters," as they are termed, are especially numerous, we are told that "all were subject to frequent attacks of pain and swelling, with ecchymosis of the wrists, ankles, and knee-joints, attended with fever; (probably preceded by it);<sup>3</sup> the complaint usually lasted about a fortnight, and then disappeared with the subsidence of the swelling

<sup>1</sup> Med.-Chirurg. Rev., No. 29, p. 227.

<sup>2</sup> In Dr Allan's narration of cases, we are told, that "the first child had been cut deeply with a knife in the hand, and the blood stopped in the usual manner." Yet this child subsequently perished by uncontrollable hemorrhage from a superficial injury.

<sup>3</sup> We have no doubt this febrile condition is intimately connected with the hemorrhagic crisis, preceding, and in some measure causing it, in the manner explained by Magendie.

and removal of the ecchymosis." If nature herself, then, have thus the power of controlling the disease, at certain times at all events, may we not be able to assist in her good work? Doubtless, we may. Although far from saying that the disease is at all identical with scrofula, yet we have seen that in several points the two diatheses closely resemble each other; and that the means suitable to the one, are also likely to prove beneficial to the other. The antistrumous or tonic treatment we have admitted to be of minor importance in the management of the actual hemorrhage, there being no time then for its operation so as to ameliorate the elaboration of the blood, as well as the condition of the solids; but from its continued use as a prophylactic measure, surely the best hopes may be entertained; and, of course, frequent and smart doses of the sulphate of soda would not be omitted. Dr Allan's patient "had been in the habit of taking a solution of sulphate of magnesia for years, about once a-week, as an active purgative, which did more good than any thing else."<sup>1</sup> This is a subject, however, too wide for discussion on the present occasion.

Another diathesis to which the hemorrhagic bears no slight resemblance in several particulars, is the scorbutic. And in this we know that citric acid has a most beneficial influence. It is not improbable, therefore, as has been suggested to me by my friend Dr Douglas MacLagan, that this medicine may be advantageously employed in the prophylactic treatment of the disease now under consideration.

In the treatment of the hemorrhagic diathesis, we have endeavoured to direct attention to the following points:—1. *Energetic treatment at the outset*, for then only have we the blood favourable for coagulation, and the parts tolerant of pressure. 2. *The propriety of internal remedies*,—astringents, sedatives, nauseants, and hydragogues,—to obviate, if possible, the morbid condition of the blood; and administered either by the mouth or anus, according to circumstances. 3. *Abandonment of escharotics*,—especially of the actual cautery, being at the best only occasionally and temporarily beneficial, and ultimately highly pernicious. 4. *Pressure*, preceded by a styptic, early, accurately, uniformly, and yet moderately applied, the best local means of treatment. 5. *Irritants and cupping*, at some distance from the bleeding point, not unlikely to prove beneficial; the former by creating an inflammation in a comparatively unimportant part, and thereby increasing the amount of fibrin in the general mass of blood; the latter by averting the sanguineous determination to the source of hemorrhage. 6. *Careful avoidance of simply febrile accession*, which would have the effect of exciting the circulation, at the same time diminishing still further the amount of fibrin. 7. *Patient*

<sup>1</sup> L. and E. MONTHLY JOURNAL, June 1842, p. 504.

*persistence* in the foregoing system, without abrupt or frequent change of remedies. 8. In protracted cases, *nutritious, yet non-stimulant diet.* 9. Failing ordinary means, *transfusion* is to be attempted. 10. The question of *prophylaxis*, not irrational; the tendency being once known, its removal ought at least to be attempted.

In conclusion, I beg to express a hope, that this interesting subject will soon obtain further and more satisfactory elucidation; and that our brethren the physicians will lend their aid thereto, remembering that their province, as well as ours, is concerned; for a man labouring under the hemorrhagic diathesis is equally likely to lose his life, by bleeding implicating the brain or other internal organs, as by hemorrhage from an injury of the surface."<sup>1</sup>

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*Note.*—To Dr David Hay's excellent paper on this subject, published in this Journal (March 1842,) I have been much indebted; especially for reference to recorded examples of this disease. But owing to the circumstance of his case having been doubly reported—in this Journal by himself, and in *The Lancet* by Dr Roberts—I regret that I have been led into some confusion as to its details; for an explanation of which, I beg to refer to the report of the last meeting of the Edinburgh Medico-Chirurgical Society, which I understand is to appear in the present number of this Journal.

23, YORK PLACE, 2d June 1842.

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<sup>1</sup> "One died of hemorrhage from the loss of a tooth, the other two from falls, in which they received blows on the head, not sufficiently severe to have produced much mischief in a sound state of the system, but which in them was followed by extravasation of blood within the cranium."—*Lancet*, No. 896, p. 187.